User manual for

Automatic A/C-Service Unit Coolius 1000

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CE

Directives:

- 2006/42/EEC Machines directive
- 2004/108/EEC Directive on elctromagnetic compatibility
- 2006/95/EEC Directive on low voltage
- IEC 34-11 (EN 60034) General standards on single phase electric, rotative machines
- IEC 335-1 Safety on electrical devices in domestic application

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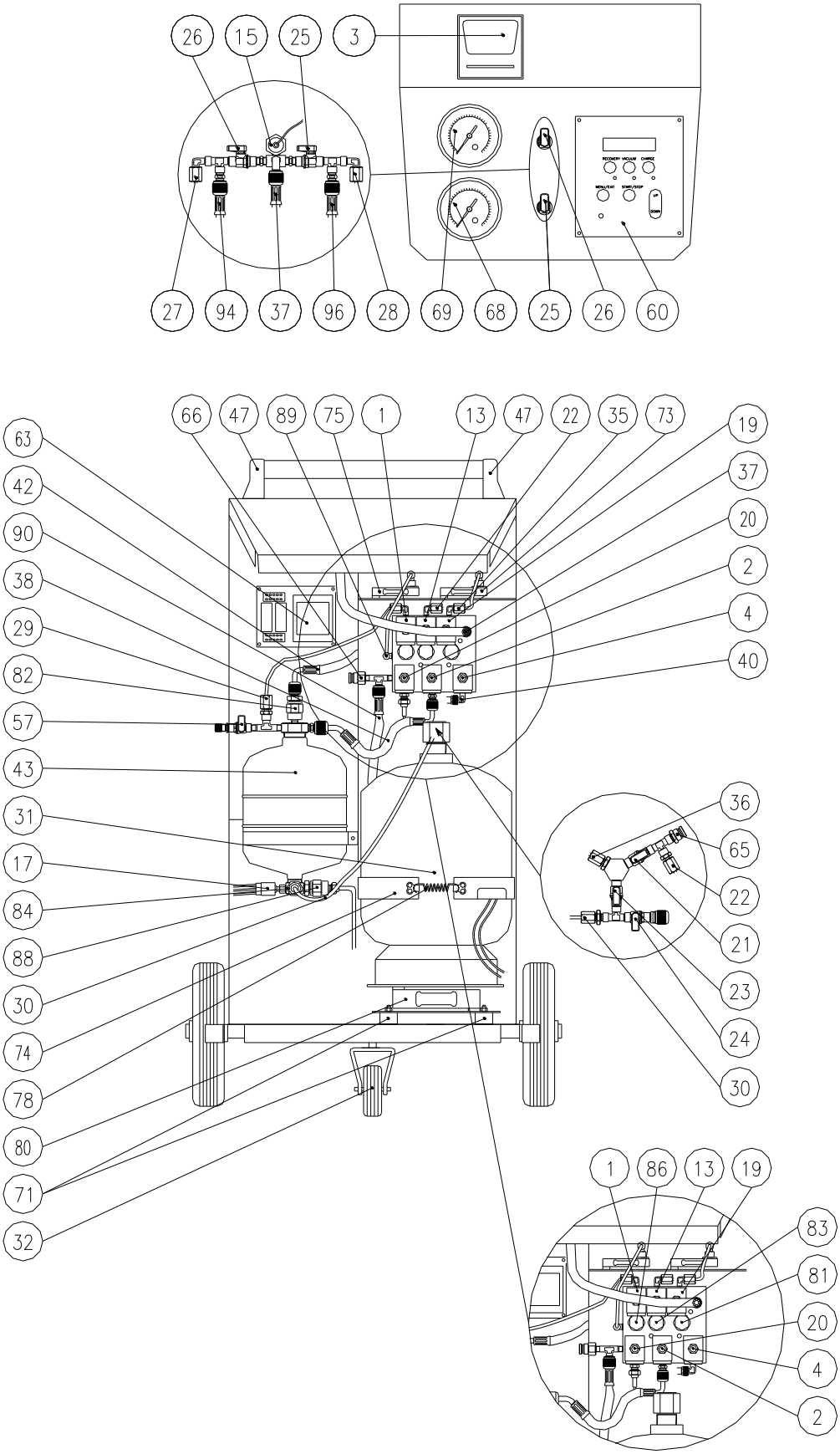
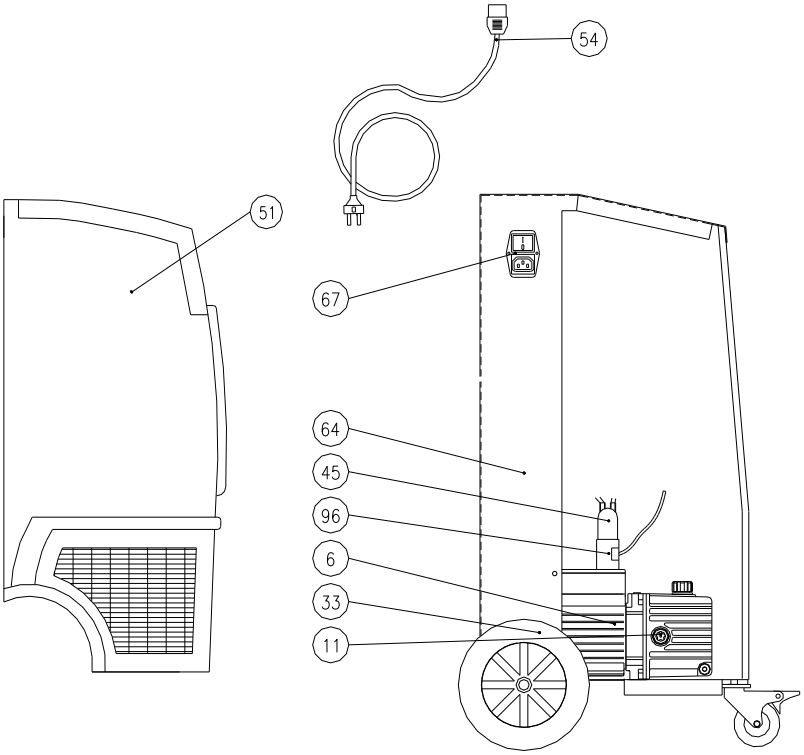
Layout drawing

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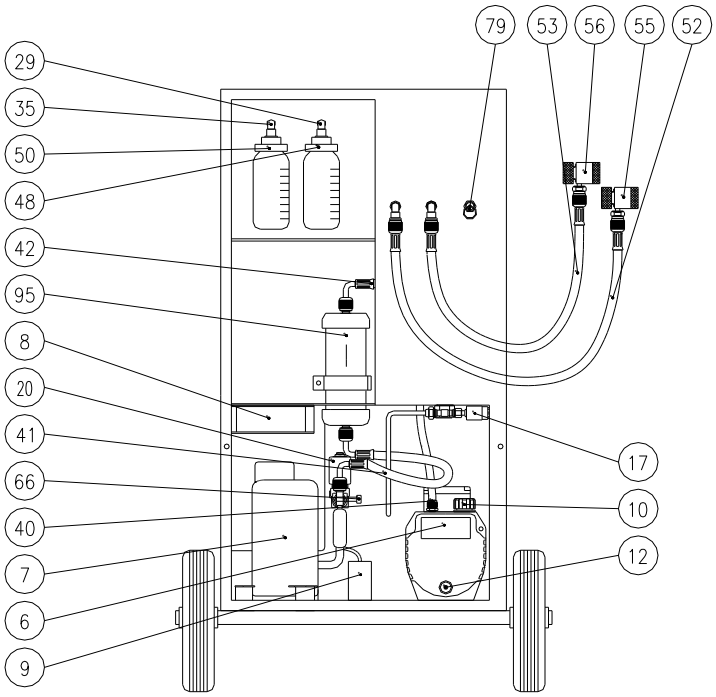
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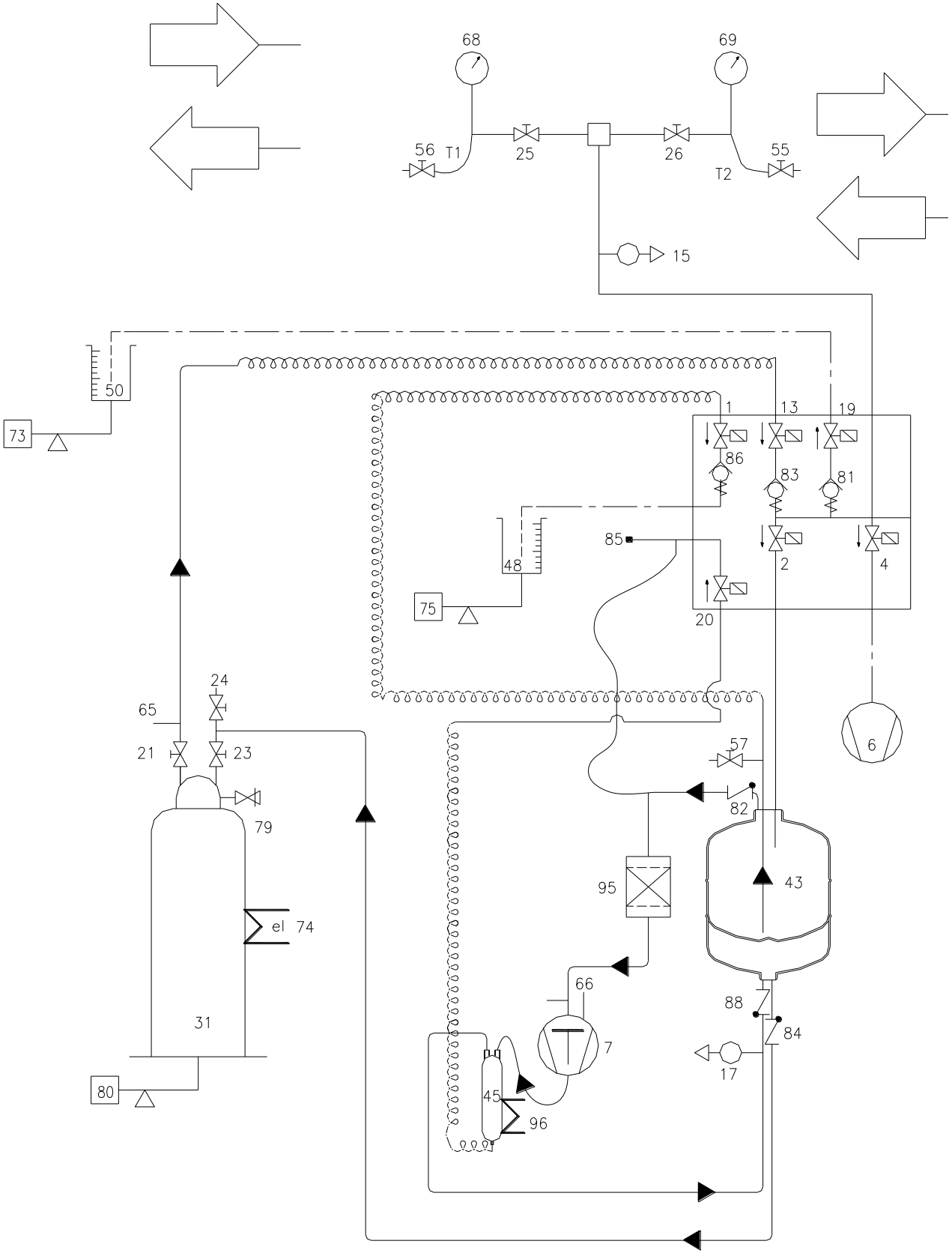
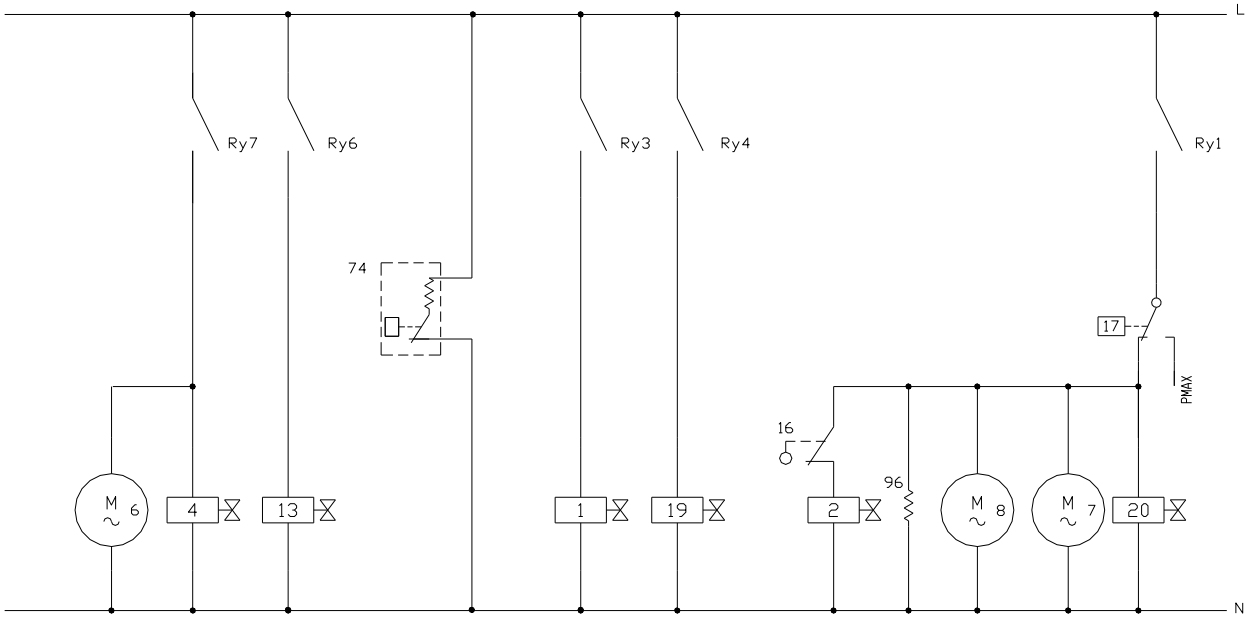
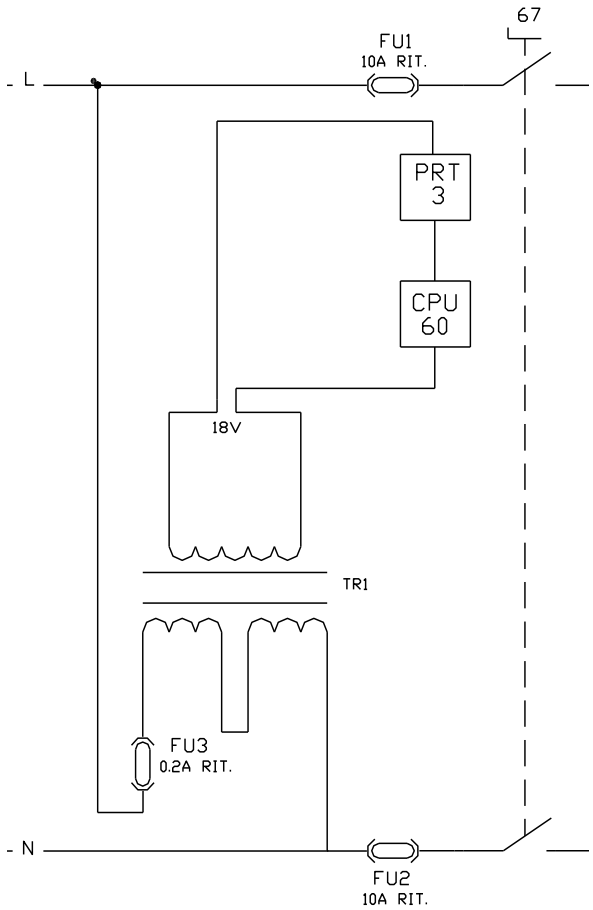
Hydraulic diagram



Electric diagram





Legend

1	Solenoid valve – oil discharge line	43	Distiller/ separator
2	Solenoid valve - recovery line	45	Oil separator
3	Printer	47	Handle support
4	Solenoid valve - vacuum line	48	Oil discharge bottle
6	Vacuum pump	50	Oil charging bottle
7	Compressor	51	Plastic cover
8	Motor-fan	52	HP flexible hose
9	Compressor starting capacitor	53	LP flexible hose
10	Vacuum pump oil filler plug	54	Supply cable
11	Vacuum pump sight glass	55	HP quick coupler
12	Vacuum pump oil drain plug	56	LP quick coupler
13	Solenoid valve -refrigerant charging line	57	Manual discharge valve on the distiller
15	Pressure transducer	60	Control Board
17	Safety pressure switch	63	Electric feeder
19	Solenoid valve –Oil charging line	64	Frame
20	Solenoid valve - oil return to compressor line	65	Bottle service connection
21	Liquid valve on the bottle	66	Service connection for compressor evacuation
22	Refrigerant charge capillary tube	67	Main power switch with socket
23	Vapor valve on the bottle	68	LP Pressure gauge
24	Service valve on refrigerant bottle	69	HP pressure gauge
25	Manual valve - LOW	71	Vibration-damping “feet”
26	Manual valve - HIGH	73	Load cell - 5 kg (oil charge)
27	Capillary hose connecting HIGH valve to HP gauge	74	Heater belt with thermostat on the bottle
28	Capillary hose connecting LOW valve to LP gauge	75	Load cell - 5 kg (oil discharge)
29	Oil discharge capillary tube	78	Spring for heater belt
30	Distiller/bottle connecting capillary hose	79	Safety valve
31	Complete refrigerant bottle	80	Load cell - 100 kg (refrigerant)
32	Front wheel with brake	81	Check valve – oil charging line
33	Rear wheel Ø 200	82	Check valve - recovery line
35	Oil injection capillary tube	83	Check valve – refrigerant charging line
36	Capillary tube for safety valve	84	Check valve – compressor delivery line (second)
37	Manifold – valves assembly connecting hose	86	Check valve – oil discharge line
38	Valves assembly/Distiller connecting hose	88	Check valve – compressor delivery line (first)
40	Vacuum pump hose	89	Oil discharge capillary tube solenoid valve-bottle
41	Compressor suction hose	90	Hose for oil return to compressor
42	Distiller/filter connecting hose	95	Filter drier
		96	Heater on oil separator of compressor

Safety precautions

This equipment is designed for trained personnel only, who must know the refrigeration fundamentals, cooling systems, refrigerants and possible damage that pressurized equipment may cause.

Carefully read the instructions contained in this manual; strict observance of the procedures described is fundamental to the operator's safety, the perfect state of the unit and constant performances as declared.

The unit must always work under the operator's direct supervision

Do not operate the unit with different refrigerant than the one it has been designed for.

Before performing any operation, make sure that the hoses used for connections have been previously evacuated and that they do not contain non-condensable gases.

Avoid skin contact; the low boiling temperature of the refrigerant (about -30°C) can cause freezing.

Avoid breathing refrigerant vapours.

It is recommended to wear suitable protections like safety glasses and gloves; contact with refrigerant may cause blindness and other personal injuries.

Do not operate near open flames and hot surfaces; the high temperatures decompose the refrigerant releasing toxic and caustic substances which are hazardous for the operator and the environment.

Always make sure that the unit is connected to a suitably protected mains supply provided with an efficient earth connection.

Before performing maintenance operations or when the unit will not be used for a long period of time, turn the unit off by turning the main switch to 0 and disconnect the power supply cord; absolutely follow the sequence of operations.

Operate the unit only in locations with suitable ventilation and a high number of air changes.

Before disconnecting the unit, make sure that the cycle has been completed and that all valves are closed in order to avoid release of refrigerant to the atmosphere.

Never fill any tank with liquid refrigerant to more than 75% of its maximum capacity.

During operations avoid release of refrigerant to the environment; this precaution is required by international environmental standards and is essential to avoid difficult leak detection in a refrigerant polluted environment.

The equipment must always work under the operator's control.

Protect the unit from dripping.

Do not modify the calibration of safety valves and control systems.

If you recover refrigerant from a cooling system equipped with a water evaporator and/or condenser, it is necessary to drain water from the evaporator and/or condenser or to keep the circulation pump running during the entire recovery operation in order to avoid frosting.

1 Introduction to recovery unit COOLIUS-1000

COOLIUS-1000 unit permits quick and efficient recovery of refrigerant from the A/C system, refrigerant recycling, system evacuation, check for tightness, additive or lubricant injection, the subsequent charge with refrigerant and measurement of the operating pressures.

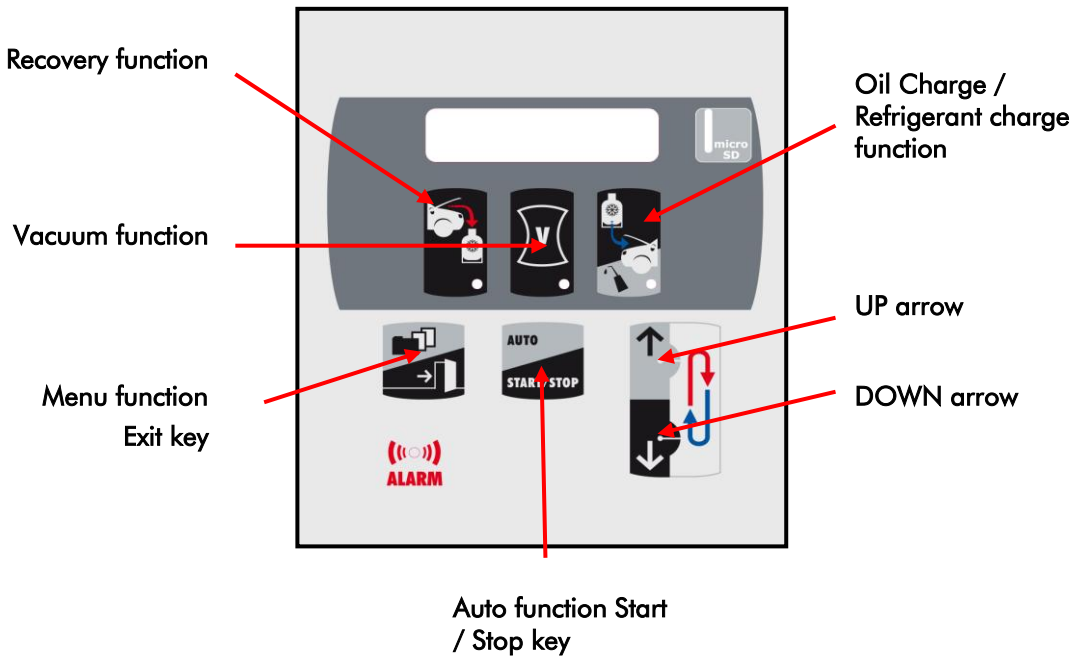
1.1 TECHNICAL SPECIFICATIONS

Model COOLIUS-1000
Refrigerant R134a
Maximum storage capacity ..... 10 kg
Maximum recovery rate ..... 0,3 kg/min
Power supply 230/1/50
Power input ..... 500 W
Storage temperature ..... -10 ÷ +50 °C
Working temperature ..... 0 ÷ 40 °C
Degree of protection IP24
Noise level ..... < 70dB (A)
Refrigerant max charge ..... 9 kg

1.2 UNIT'S COMPONENTS

Component	**Feature**
Compressor	6 cc. recovery rate 0,3 kg/min
Vacuum pump	Rotary vane type and single stage, 100 l/min
Filter direr	Dehydrating capacity of 75 PPM of water
Flexible hoses	L=3 meters with quick couplers
Fan	Axial type and high flow rate
Refrigerant bottle	Capacity of 10 kg with liquid and vapour connections
Distiller – Separator	High heat exchange distillation chamber with automatic flow control
Bottle for discharged oil	Capacity of 200 grams of oil, on load cell
Bottle for oil charge	Capacity of 200 grams of oil, on load cell
Control module	Fast access keys to the functions

1.2 Control module



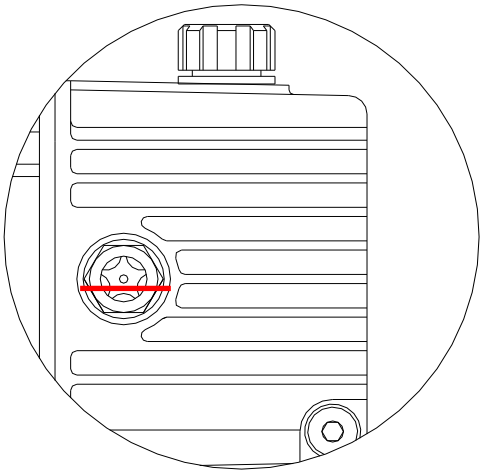
	Recovery	Access to the Refrigerant Recovery function
	Vacuum	Access to the Vacuum function
	Charge	Access to the oil/refrigerant charging function
	Menu/Exit	*Standby:* Access to the menu for the modification of the unit's settings parameters *During a function setting:* Back to the previous screen
	Auto Start/Stop	*Standby:* Access to the automatic function *During a function:* Start and end of the function
	Up/Down	*When pressed singularly:* enables to shift through the various ranges and modify the numerical values *When pressed at the same time:* Start of the Flushing function

2 Preparing unit COOLIUS-1000 for use

2.1 Checking the vacuum pump oil level

Before checking the oil level, the unit must be placed on a level surface and its power supply must be **turned off.**

The user must check that the vacuum pump oil level covers half of the sight glass (see drawing below)



2.2 TURNING COOLIUS-1000 ON

1. Connect the unit to the power supply
2. Place the power switch (ref. 67) in position 1. When turned on, the unit will display the software version and the hardware version. Wait a few seconds in order to see the standby screen. By means of the **UP/DOWN** arrows, it is possible to shift to the second standby screen

R	1	3	4	a				0	.	0	0	0	k	g	Ξ
1	0	:	3	4			0	8	/	1	0	/	1	2	▼

Standby-screen 1

O	i	l		i	n								0	g	▲
O	i	l		o	u	t							0	g	Ξ

Standby-screen 2

2.3 "ZERO" SCALE CHECK

1. Make sure that the unit refrigerant bottle is empty
2. Wait at least 5 minutes so that the bottle/scale assembly stabilizes before proceeding; **in case the values of scales are not equal to 0, perform the procedure by following the below steps; otherwise go to section 2.4.**
3. Proceed to the unit initial reset before the first use
4. Press the **MENU** key
5. Select **Service** by means of the **UP / DOWN** arrows.
6. Confirm by pressing the **START** key
7. Press the following keys in succession: **Vacuum, Charge, Down, Up**
8. When coming back to the Standby screen, all the scales will be placed on the value 0.

2.4 Filling refrigerant into the internal bottle

1. Place the bottle containing refrigerant so that liquid refrigerant will come out (bottle with tube upright, bottle without tube upside down)
2. Connect the **53** hose to the refrigerant bottle

3. Open the LOW valve ref. **25** and close the HIGH valve ref. **26**
4. Press the **Vacuum** key on the control module
5. Set a vacuum time of 5 minutes by means of the **UP/DOWN** arrows

V	a	c	u	u	m									
T	i	m	e										5	'

Press the **START** key to start the function

Once the vacuum cycle is completed, slowly open the valve on the bottle containing refrigerant

Press the Recovery key

Set the refrigerant quantity to recover (we suggest a quantity of 3.000 kg) by means of the **UP/DOWN** arrows

R	e	c	o	v	e	r	y							
R	1	3	4	a					3	.	0	0	0	k	g

Press the **START** key to start the function

Wait until the recovery cycle is completed. A sound signal will let the user know that the cycle is over.

Close the valve on the bottle containing refrigerant

Start a recovery cycle with ALL set

R	e	c	o	v	e	r	y							
R	1	3	4	a								A	l	l

Wait for the end of the cycle

Disconnect the hose of the bottle

Re-place the valve ref. **55** on the hose end

⚠ ***IMPORTANT!*** Perform a vacuum cycle for 2 minutes

3 Using COOLIUS-1000 unit

3.1 Refrigerant recovery

WARNING! During recovery, regulate the LOW and HIGH valves on the control panel, so that the input pressure never rises over 5 bar..

1. Turn on the engine with closed hood
2. Turn the air-conditioner on and have it run for some minutes
3. Open the hood and set the air-conditioner fan to maximum speed
4. Have the vehicle engine run slowly (800 - 1200 revolutions/min) for a few minutes
5. Turn the vehicle engine off and have the air-conditioner fan run at maximum speed and start the recovery operations
6. Connect the hoses to the A/C system which needs a maintenance
7. Open the LOW (ref. 25) and HIGH (ref. 26) valves according to how the connection on the system was made
8. Press the **Recovery** key

R	e	c	o	v	e	r	y							
R	1	3	4	a								A	l	l

The unit sets the recovery function on **ALL** by default

Press the **START** key to start the function. During the recovery cycle, the recovered refrigerant quantity appears on the display.

R	e	c		u	n	d	e	r		w	a	y		
R	1	3	4	a					0	.	0	0	k	g

In case of emergency, it is possible to leave the function by keeping the **STOP** key pressed for more than 3 seconds.

During the cycle, the unit performs the automatic oil discharge.

O	i	l		d	i	s	c	h	a	r	g	e		
												0	g	.

Wait for the function to be completed; the quantities of recovered refrigerant and oil will appear on the display.

R	1	3	4	a					1	.	1	0	k	g
O	i	l		O	u	s						1	0	g	.

WARNING! Do not pollute environment with oil; it is a special waste and must be disposed of according to the regulations in force.

3.2 Vacuum + Vacuum Test

1. Connect the hoses to the A/C system which needs a maintenance
2. Open the LOW (ref. 25) and HIGH (ref. 26) valves according to how the connection on the system was made
3. Press the **Vacuum** key.

V	a	c	u	u	m									
T	i	m	e									3	0	'

Set a vacuum time by means of the **UP/DOWN** keys. We suggest a vacuum time of at least 30 minutes.

Press the **START** key to start the function. (In case of emergency, it is possible to leave the function by keeping the **STOP** key pressed for more than 3 seconds)

When the vacuum cycle is over, the test starts to check the possible presence of leaks in the A/C system.

When the vacuum test is over, or if there are leaks, a sound signal will inform the user

V	a	c	u	u	m							3	0	'
V	a	c	u	u	m		s	e	s	s			O	K

3.3 Oil / Uv - Refrigerant

1. Connect the hoses to the A/C system which needs a maintenance
2. Open the LOW (ref. 25) and HIGH (ref. 26) valves according to how the connection on the system was made
3. Press the **Charge** key
4. The operator will be asked to select the type of charge: whether it will be effected through a single hose (blue or red) or whether it will be effected through both hoses. This enables the unit to calculate the correct value of the pre-charge (when it is set).

2		h	o	s	e	s		L	+	H				▲
1		h	o	s	e									▼

5. Confirm with **START** and then the screen for setting the oil/UV quantity will appear.

O	i	l									S	A	M	E	
O	i	l		M	a	x					1	5	0	g	

6. The units sets SAME by default. During the oil injection phase, the same quantity of oil that has been recovered during recovery will be re-injected into the system.
7. The units checks the maximum quantity that can be charged and indicates it on the second line of the display.
8. In case you would like to set a different quantity than SAME, you can modify it the quantity by means of the **UP/DOWN** arrows and confirm with **START**.

Suggested quantities for refilling the A/C system with oil

According to the type of A/C system component you have replaced, you need to fill in the lubricant quantity indicated below, even if no oil has been extracted during recovery.

Evaporator: 50cc

Condenser: 30cc

Filter: 10cc

Pipes: 10cc

In any case the operator must follow the instructions of the A/C system manufacturer

9. Press START and the screen for setting the refrigerant quantity will appear

R	1	3	4	a				0	,	3	0	0	k	g	▲
D	a	t	a	b	a	s	e								▼

10. If you press START on the first line, the refrigerant quantity can be set manually, by means of the UP/DOWN arrows and confirming with START.

R	1	3	4	a					0	,	3	0	0	k	g
M	a	x							4	,	6	6	5	k	g

11. Otherwise, on the second line, you can gain access to the database and choose between Standard Database (containing the main cars on the market) and Personal Database (created by the user).

D	b		S	t	a	n	d	a	r	d				
D	b		P	e	r	s	o	n	a	l				

12. After having set the refrigerant quantity either by means of the manual menu or by means of the database menu, you will have the START screen (cycle start) where the settings will be summarized on the second line.

*	S	t	a	r	t		S	t	a	r	t	*			
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

13. Press START to start the function.

⚠ *IMPORTANT* The refrigerant charge cycle is performed "by steps" in order to reach a high precision. You may hear subsequent clicks" inside the unit during this phase.

14. When the function is completed, a beep will let the operator know that the cycle is over and the display will show the information on the cycle just performed.

R	1	3	4	a					0	,	3	0	0	k	g
O	i	l			i	n							5	g	

3.4 Automatic cycle

1. Connect the hoses to the A/C system which needs a maintenance
2. Open the LOW (ref. 25) and HIGH (ref. 26) valves according to how the connection on the system was made
3. Press the Auto key

⚠ *IMPORTANT* Before the cycle starts, the unit will check the available volume inside the bottle. In case the total weight on the scale exceeds 6.600kg, COOLIUS-1000 unit will display the following alarm signal: "Check bottle weight".

The operator will be asked to select the type of charge: whether it will be effected through a single hose (blue or red) or whether it will be effected through both hoses. This enables the unit to calculate the correct value of the pre-charge (when it is set)

2		h	o	s	e	s		L	+	H				▲
1		h	o	s	e									▼

Confirm with **START** and then the screen for setting Vacuum will appear

					V	a	c	u	u	m				
T	i	m	e									3	0	'

Modify the vacuum time by means of the UP/DOWN arrows and confirm with START.

⚠ ***IMPORTANT*** The function of refrigerant recovery will be performed in case refrigerant is detected in the A/C system when connecting the unit to it.

Now the screen for setting the oil/UV quantity appears

O	i	l									S	A	M	E	
O	i	l			M	a	x				1	5	0	g	

The units sets SAME by default. During the oil injection phase, the same quantity of oil that has been recovered during recovery will be re-injected into the system.

The units checks the maximum quantity that can be charged and indicates it on the second line of the display.

In case you would like to set a different quantity than SAME, you can modify it the quantity by means of the **UP/DOWN** arrows and confirm with **START**.

Suggested quantities for refilling the A/C system with oil

According to the type of A/C system component you have replaced, you need to fill in the lubricant quantity indicated below, even if no oil has been extracted during recovery.

Evaporator: 50cc

Condenser: 30cc

Filter: 10cc

Pipes: 10cc

In any case the operator must follow the instructions of the A/C system manufacturer

4. Press **START** and the screen for setting the refrigerant quantity will appear

R	1	3	4	a				0	,	3	0	0	k	g	▲
D	a	t	a	b	a	s	e								▼

5. If you press **START** on the first line, the refrigerant quantity can be set manually, by means of the **UP/DOWN** arrows and confirming with **START**.

R	1	3	4	a					0	,	3	0	0	k	g
M	a	x							4	,	6	6	5	k	g

6. Otherwise, on the second line, you can gain access to the database and choose between Standard Database (containing the main cars on the market) and Personal Database (created by the user).

D	b		S	t	a	n	d	a	r	d					
D	b		P	e	r	s	o	n	a	l					

7. After having set the refrigerant quantity either by means of the manual menu or by means of the database menu, you will have the START screen (cycle start) where the settings will be summarized on the second line.

*	S	t	a	r	t		S	t	a	r	t	*			
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

8. Press START to start the function.
9. When the function is completed, a beep will let the operator know that the cycle is over and the display will show the information on the cycle just performed.

R	1	3	4	a				1	.	1	0	0	k	g
O	i	l			O	u	t				1	0	g	.

V	a	c	u	u	m							3	0	‘
V	a	c	u	u	m		t	e	s	t			O	K

O	i	l									1	0	g	.
R	1	3	4	a				0	.	7	0	0	k	g

3.5 Flushing

1. Connect the hoses to the A/C system which needs a maintenance
2. Open the LOW (ref. 25) and HIGH (ref. 26) valves according to how the connection on the system was made
3. Press the UP/DOWN keys to enter the function menu

V	a	c	u	u	m							1	0	‘
F	l	u	s	h	i	n	g		c	y	c	l	e	3

Set the vacuum time by means of the UP/DOWN arrows and press the START key to confirm

Set the number of cycles by means of the UP/DOWN arrows and press the START key to start the function

When the function is completed, a sound signal will let the user know that the cycle is over and the summary of the operation performed will be displayed.

⚠ *IMPOTRANT* At the beginning of the cycle, the unit checks the volume available inside the bottle. In case the total weight on the scale is under 4.000 kg, the unit will display the alarm message “Check weight in the bottle”. In fact, in order to perform the function, it is necessary to have at least 4.000 kg of refrigerant inside the bottle.

3.6 Checking A/C system operating pressures

1. Make sure that the LOW (ref. 25) and HIGH (ref. 26) valves are closed and that the power switch (ref. 67) is on position 0

Connect the 53 hose to the cooling system low pressure side

Connect the 52 hose to the cooling system high pressure side

Start the compressor of the A/C system

Read the pressure and its corresponding evaporation temperature on the 68 pressure gauge

Read the pressure and its corresponding condensing temperature on the 69 pressure gauge

g) Compare the values with the ones suggested by the cooling system manufacturer

3.7 Disconnecting the unit from the A/C system

1. Disconnect the **52** hose from the A/C system with the A/C system compressor working.
2. Make sure that the **53** hose is connected to the A/C system
3. Open the LOW (ref. 25) and HIGH (ref. 26) valves in order to have all the liquid refrigerant be sucked by the A/C system
4. As soon as the pressures on the high and low pressure gauges are the same and do not exceed 2÷3 bar, disconnect the **53** hose from the A/C system
5. Perform a recovery cycle to extract the remaining refrigerant from the hoses so that the unit is immediately ready for the next operation
6. Turn the unit off (power switch **67** in position **0**)
7. Close the LOW (ref. 25) and HIGH (ref. 26) valves
8. Reposition **52** and **53** in their supports
9. Carefully screw the protective caps on the A/C system service valves
10. Using a leak detector, check the A/C system for leaks

WARNING: The introduction of tracer additives and the following use of a UV leak detector will make it easier to locate the point of the possible leak in the future.

3.8 Setting Menu

If you press the **MENU** key in the standby screen, you can gain access to the setting menu of the unit.

- **Car plate:** By pressing the START key, it is possible to type the plate of the car on which you are making maintenance. You can modify each single field by means of the UP/DOWN arrows and move forward by means of the START key. When the car plate number has been typed, press the MENU key to leave.
- **Language:** By pressing the START key, it is possible to change the language of the unit. Shift through the languages by means of the UP/DOWN arrows and confirm with START.
- **Unit of measurement:** By pressing the START key, it is possible to modify the unit of measurement (INTERNATIONAL or IMPERIAL). Shift by means of the UP/DOWN keys and confirm with START
- **Inner Database:** By pressing the START key, it is possible to make your own database. Shift onto the field you want to modify by means of the UP/DOWN keys and confirm with START. Modify each digit by means of the UP/DOWN arrows and confirm with START. Then type the value of the refrigerant charge by means of the UP/DOWN arrows and confirm with START
- **Date and Hour:** By pressing the START key, it is possible to set the date and hour. Modify each value by means of the UP/DOWN arrows and confirm with START.
- **Calibration**
- **Service**: By pressing the START key, it is possible to make some service operations using several keys combinations.
  With the following combination: Recovery - Down - Charge - Vacuum , it is possible to cancel all the data saved on the SD-Card

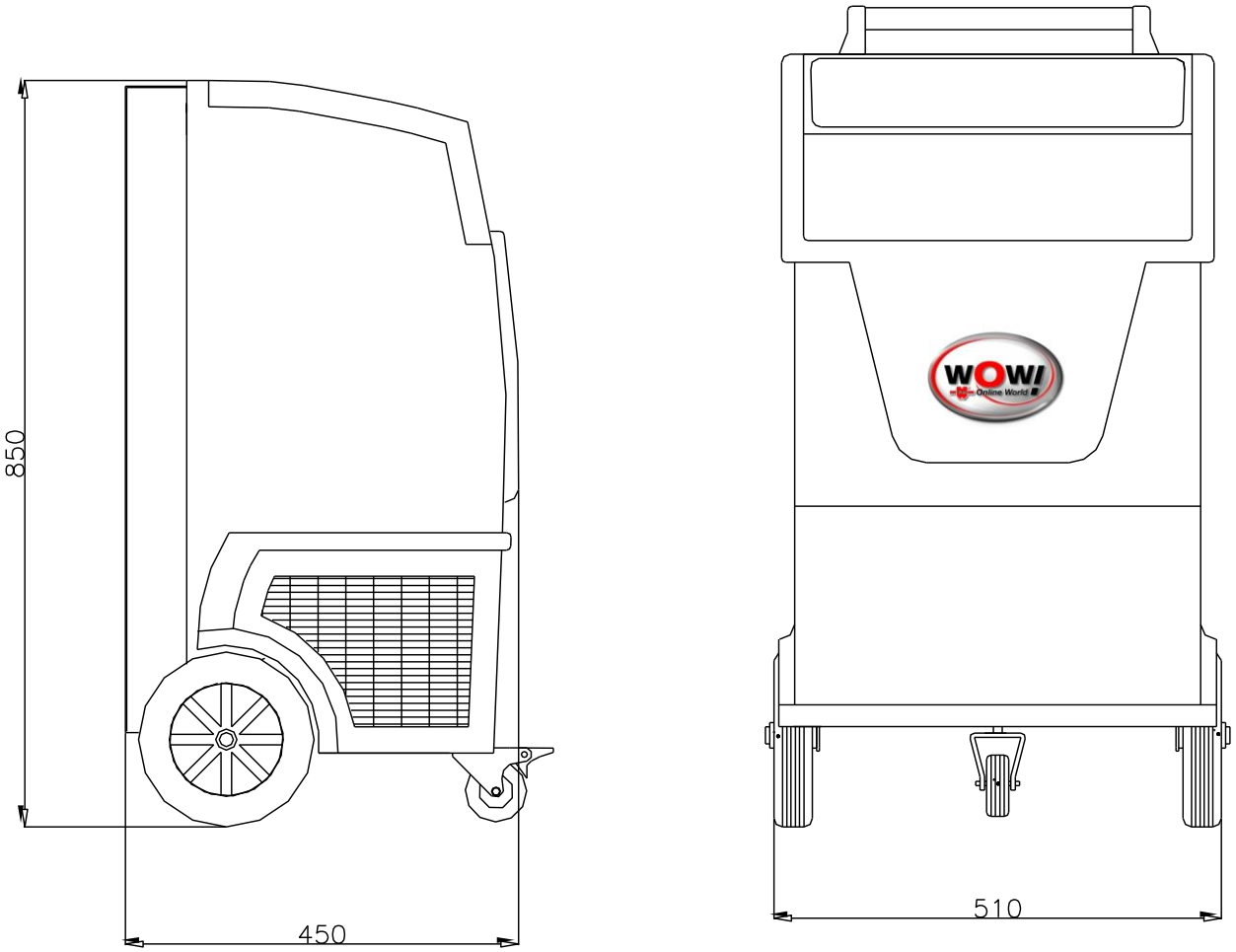
  With the following combination: Vacuum - Charge - Down - Up , it is possible to reset all the scales
- **Contrast**: By pressing the START key, it is possible to modify the value of the display contrast.
- **Data exportation**: By pressing the START key, it is possible to export the services performed by the unit into the SD-card (from inside memory to SD-Card). The unit creates a .txt file to import into your own PC. In case the message "ERROR CODE 08" appears, re-start the unit and try again the exportation procedure.

  To cancel all the data saved in the memory card, follow the procedure explained at "Service"
- **Workshop data**: By pressing the START key, it is possible to modify the 6 lines available on the report to write some information about your own workshop. Once the information have been written, they will be printed on each report.

4 Accessories and spare parts

Part number	Description
14015013	XH412 anti-acid filter direr
12002003	l oil for vacuum pump
14020014001	G19020 kit of gaskets for ¼' SAE hoses - 10pcs
14020015001	G19030 kit of gaskets for 3/8' SAE hoses - 10pcs
14025079	Printer update kit

5 Dimensions and weight



Net weight with empty refrigerant bottle ..... 50 kg

WOW! reserves the right to discontinue, or change at any time specifications or designs without notice and without incurring obligations according to her policy of always improving her products.

Support

For more support please contact your local service partner.
www.wuerth.com

Newer versions of this manual please go to our homepage.
www.wow-portal.com

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